

TYPTON NANUS SP. NOV., A NEW COMMENSAL SHRIMP (CRUSTACEA:DECAPODA:PALAEMONIDAE) FROM THE AUSTRALIAN NORTH-WEST SHELF

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ABSTRACT

A new species of commensal shrimp, *Typton nanus* sp. nov., (Decapoda:Palaemonidae) from the Australian North-west Shelf, is described and illustrated. The single example was collected from 40-46m from an unidentified sponge host. Seven species of *Typton* Costa are now known from the Indo-West Pacific region, all also occurring in Australian waters. The present report represents the greatest depth record for an Indo-West species of the genus.

KEYWORDS: Taxonomy, Crustacea, Palaemonidae, new species, commensal, sponge associate, Timor Sea.

INTRODUCTION

A single example of a small commensal shrimp was found in a sponge collected from the catch of a Thai stern trawler by Dr B.C. Russell, as part of a study of the commercial fish catch in northern Australian waters. The species could not be identified with any of the previously reported species and is now described as new, raising to seven the numbers of species of *Typton* Costa, 1844, known from the Indo-West Pacific region, and also from Australian waters. The species is remarkable particularly for its small size, and

it also indicates the greatest depth at which species of this genus have so far been recorded in the Indo-West Pacific Region.

SYSTEMATICS

***Typton nanus* sp. nov.**

(Figs 1-5)

Type material. HOLOTYPE - ♀, stn. BCR 85-2, Australian North-West Shelf, 16° 34'S, 121° 27'E, 40-46m, Thai stern trawler BYLA, 7 April 1985, coll. B.C. Russell, Northern Territory Museum NTM Cr. 005204.

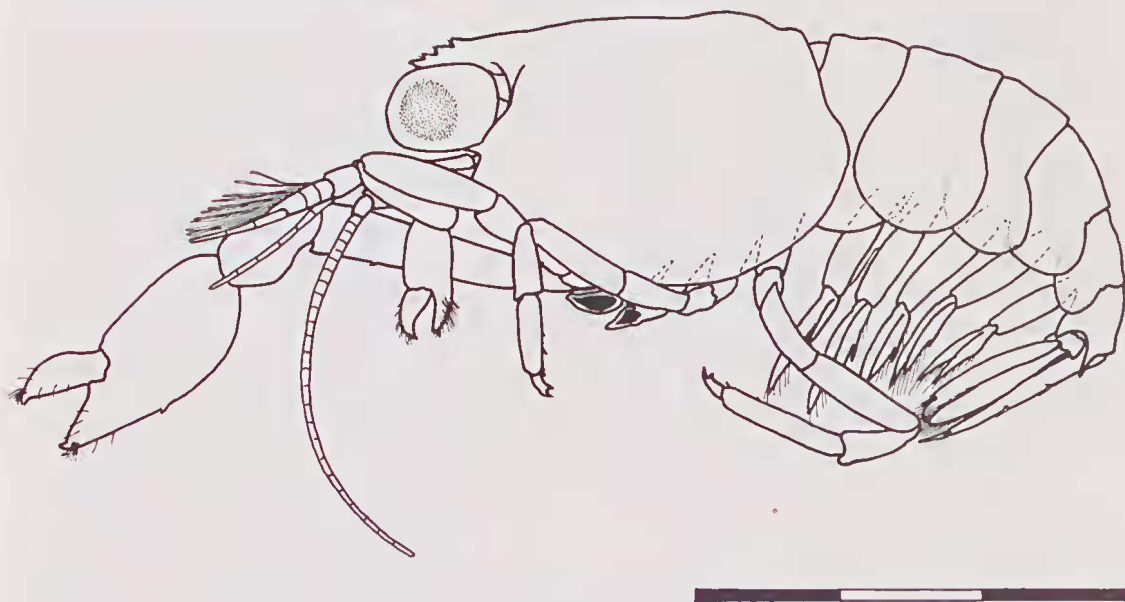


Fig. 1. *Typton nanus* holotype ♀, Timor Sea. Scale divisions, 0.5 millimetres.

Description. A very small shrimp of slightly compressed or subcylindrical body form.

Carapace slightly compressed, glabrous, smooth; rostrum short, acute, compressed, horizontal, not exceeding anterior margin of cornea, with three small acute teeth on distal half, lateral carinae obsolete, ventral margin convex, unarmed, non-setose; orbit and inferior orbital angle obsolete, supraorbital and hepatic spines absent, antennal spine small, acute, marginal, anterolateral angle of branchiostegite obtusely rounded.

Abdomen subcylindrical, slightly depressed posteriorly; sixth segment as long as fifth, 0.6 times longer than anterior depth, depressed, with large acute, broad postero-ventral angle and slender, acute posterolateral angle, posterior margin unarmed; pleura of first three segments broadly rounded, fourth and fifth pleura slightly posteriorly produced, rounded. Telson about 2.5 times sixth segment length, about 2.3 times longer than anterior width, lateral margins convex, convergent, posterior margin about 0.45 of anterior width, two pairs of dorsal spines.

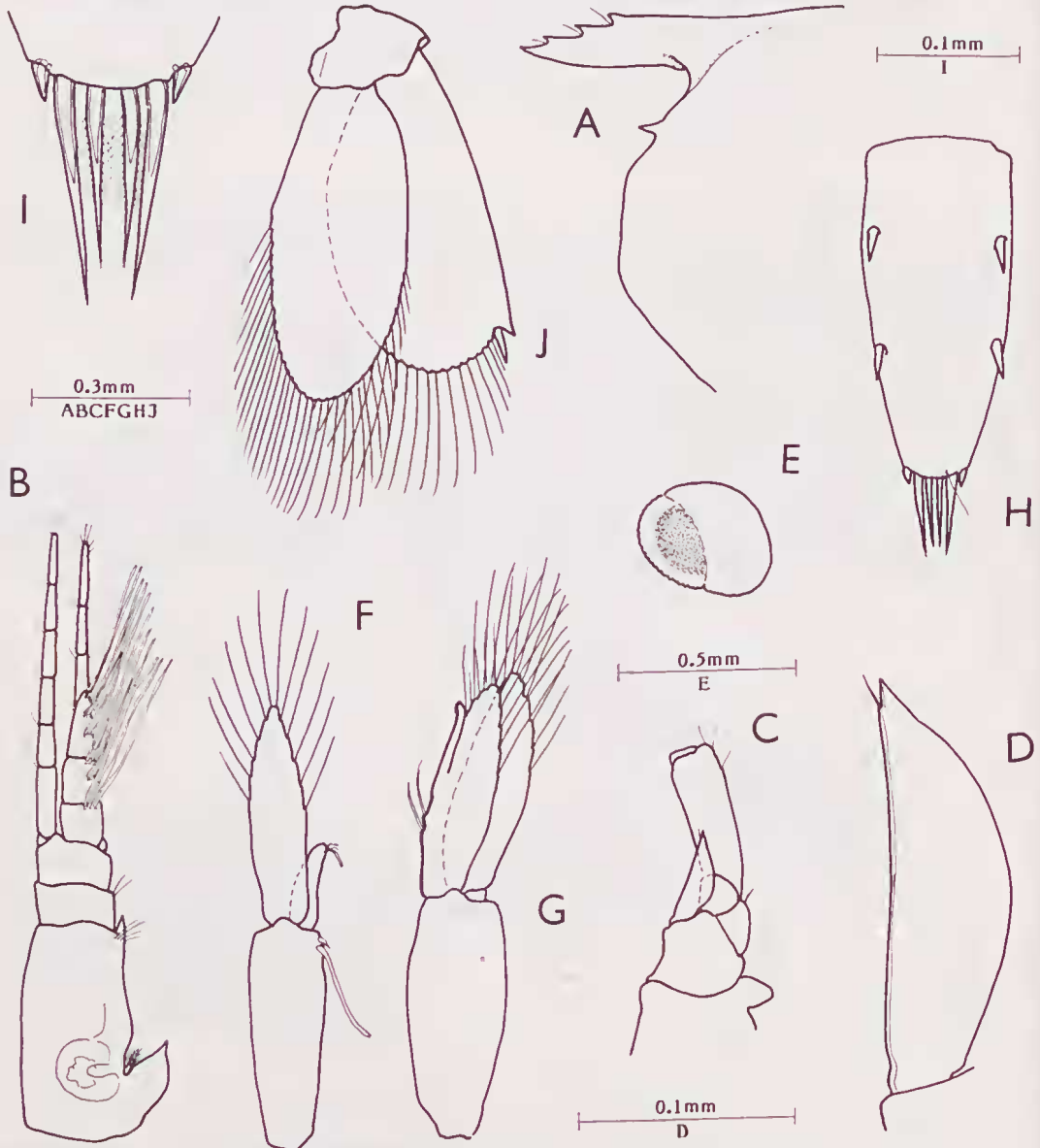


Fig. 2. *Typton nanus* holotype ♀: A, anterior carapace and rostrum, lateral; B, antennule; C, antenna; D, scapho-crite; E, eye; F, first pleopod; G, second pleopod; H, telson; I, same, posterior spines; J, uropod.

anterior pair submarginal at 0.25 of telson length, posterior pair marginal at 0.6, spines about 0.12 of telson length, posterior margin convex without median point; three pairs of posterior spines, lateral spines short and stout, intermediate spines long and slender, about 0.25 of telson length, submedian spines slightly shorter and more slender than intermediate spines, setulose.

Antennule reduced, peduncle exceeding cornea by two distal segments, proximal segment of peduncle 2.0 times longer than broad, without small ventral tooth on medial margin, distolateral angle with small acute tooth, stylocerite broad, acute distally, projecting, reaching to about 0.33 of segment length, statocyst normal, with granular statolith; distal segments subequal, about 2.0 times longer than wide, together equal to about 0.4 of proximal segment length, distal segment slightly longer and narrower than proximal; upper flagellum subequal to peduncle length, feebly biramous, shorter ramus with three segments and six groups of aesthetascs, almost completely fused to longer ramus, longer ramus with three free segments only; lower flagellum subequal to upper, six segments only.

Antenna reduced; basicerite robust, laterally unarmed, with conspicuous antennal gland tubercle medially, ischiocerite and merocerite normal; carpocerite reaching to about distal margin of intermediate segment of antennular peduncle, about 3.3 times longer than broad, flagellum short, about 1.5 times carapace length; scaphocerite reduced, reaching to about middle of carpocerite, 3.5 times longer than wide, acutely pointed distally, medial margin convex, devoid of setae, lateral margin very feebly concave, with short preterminal seta.

Eye well developed, globular; cornea oblique, about 1.8 times longer than deep, peduncle about 1.4 times longer than corneal diameter, about 1.8 times longer than wide.

Mandible (left) with slender corpus, without palp; molar process slender, tapering, obliquely truncate distally, with several very acute teeth and several spines; incisor process completely lacking. Maxillula with feebly bilobed palp, upper lobe greatly reduced, lower lobe larger with single short simple seta ventrally; upper lacinia well developed, with seven long slender spines distally, setulose proximally, serrulate distally, becoming

spiniform setae proximally, with numerous setae submarginally; lower lacinia slender, with five long serrulate distal spines and several shorter setae. Maxilla damaged in dissection, palp simple, with two short plumose setae laterally; basal endite well developed, bilobed, upper lobe larger and broader than lower, lobes with 9 and 5 slender, feebly setulose setae respectively; coxal endite obsolete; scaphognathite well developed, broad; posterior lobe 3.0 times longer than wide. First maxilliped with slender, subcylindrical, non-setose palp; basal endite broad, medial margin sparsely setose with slender feebly setulose setae; coxal endite reduced, rounded medially, non-setose; exopod well developed with moderately large caridean lobe, flagellum with four plumose setae distally; epipod small, feebly bilobed. Second maxilliped of normal form, dactylar segment broad, 3.0 times longer than wide, with marginal row of long serrulate setae and submarginal row of short serrulate setae; propodal segment feebly armed, with two slender serrulate setae only; carpus, merus and ischiobasis normal; exopod flagellum with four plumose setae distally; coxa with small rounded process medially with single short simple seta, damaged in dissection laterally, with small simple epipod without podobranch. Third maxilliped with small endopod, reaching to about middle of carpocerite; ischiomerus completely fused to basis, antepenultimate segment about 2.5 times longer than proximal width, compressed, slightly tapering distally, sparsely setose medially, basal region broadly rounded; penultimate segment about 0.33 of antepenultimate segment length, about 1.5 times longer than broad, expanded distomedially, bearing seven long slender serrulate spines; terminal segment short, about 0.6 of penultimate segment length, tapered, about 1.5 times longer than proximal width, with about 12 slender serrulate spines, longer spines distally, shorter proximally; exopod with four plumose distal setae; coxa robust, medially excavate, with low rounded lateral plate and small rudimentary arthrobranch. Paragnath very large, broad and bilobed.

Thoracic sternites narrow and unarmed.

First pereopod robust, exceeding carpocerite by distal fourth of merus. Chela with palm about 1.2 times longer than deep, moderately compressed; dactylus subspatu-

late, stout, tapering, about 1.7 times longer than proximal width, with stout, acute, narrow distal tip with similar shorter and stouter tooth medially and smaller tooth with short blunt cutting edge proximally, with dense group of short simple setae distodorsally; fixed finger similar, with transverse rows of

short setae proximally; carpus short and stout, about 0.9 of chela length, 2.4 times longer than distal width, moderately excavate distally, tapering proximally, with few distoventral cleaning setae; merus robust, about 1.35 times carpus length, 2.7 times longer than wide, slightly swollen centrally;

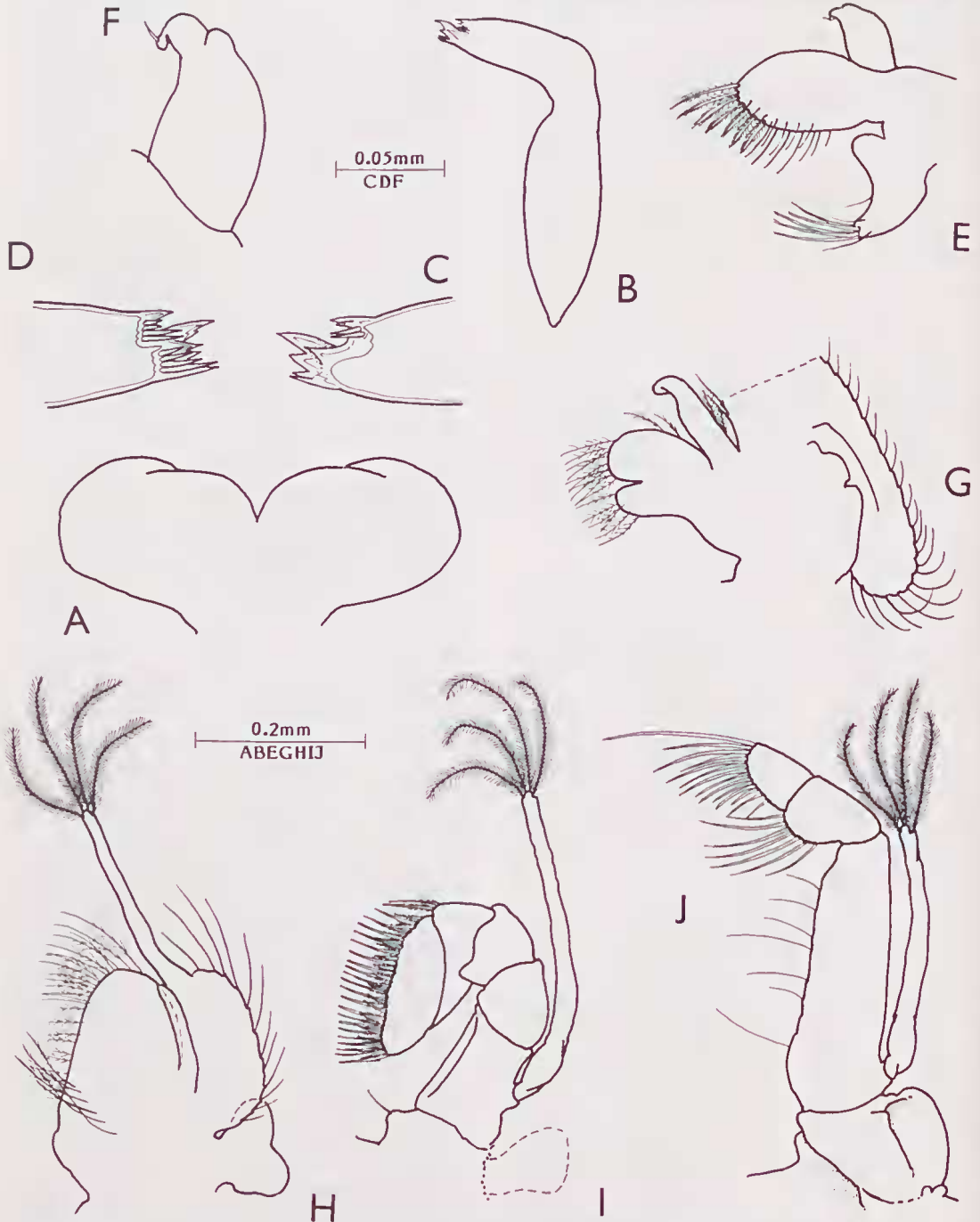


Fig. 3. *Typton nanus* holotype ♀: A, paragnath; B, mandible; C, D, same, molar process; E, maxillula; F, same, palp; G, maxilla; H, first maxilliped; I, second maxilliped; J, third maxilliped.

ischium about 0.6 of merus length, centrally swollen, obliquely articulated with basis; basis about 0.8 of ischium length, robust; coxa stout, without ventral process.

Right second pereiopod well developed, left pereiopod missing; chela slightly compressed, smooth, glabrous, about 1.65 times longer than deep, moderately swollen with single small acute distoventral tooth; dac-

tylus strongly compressed, about 2.0 times longer than proximal depth, outer margin curved with dense tuft of short setae subterminally, with small acute hooked distal tooth, cutting edge straight, entire, with small rounded tooth proximally bearing three small stout denticulate spines; fixed finger deeply cannulate, medial lip elevated, with larger acute proximal tooth, bearing

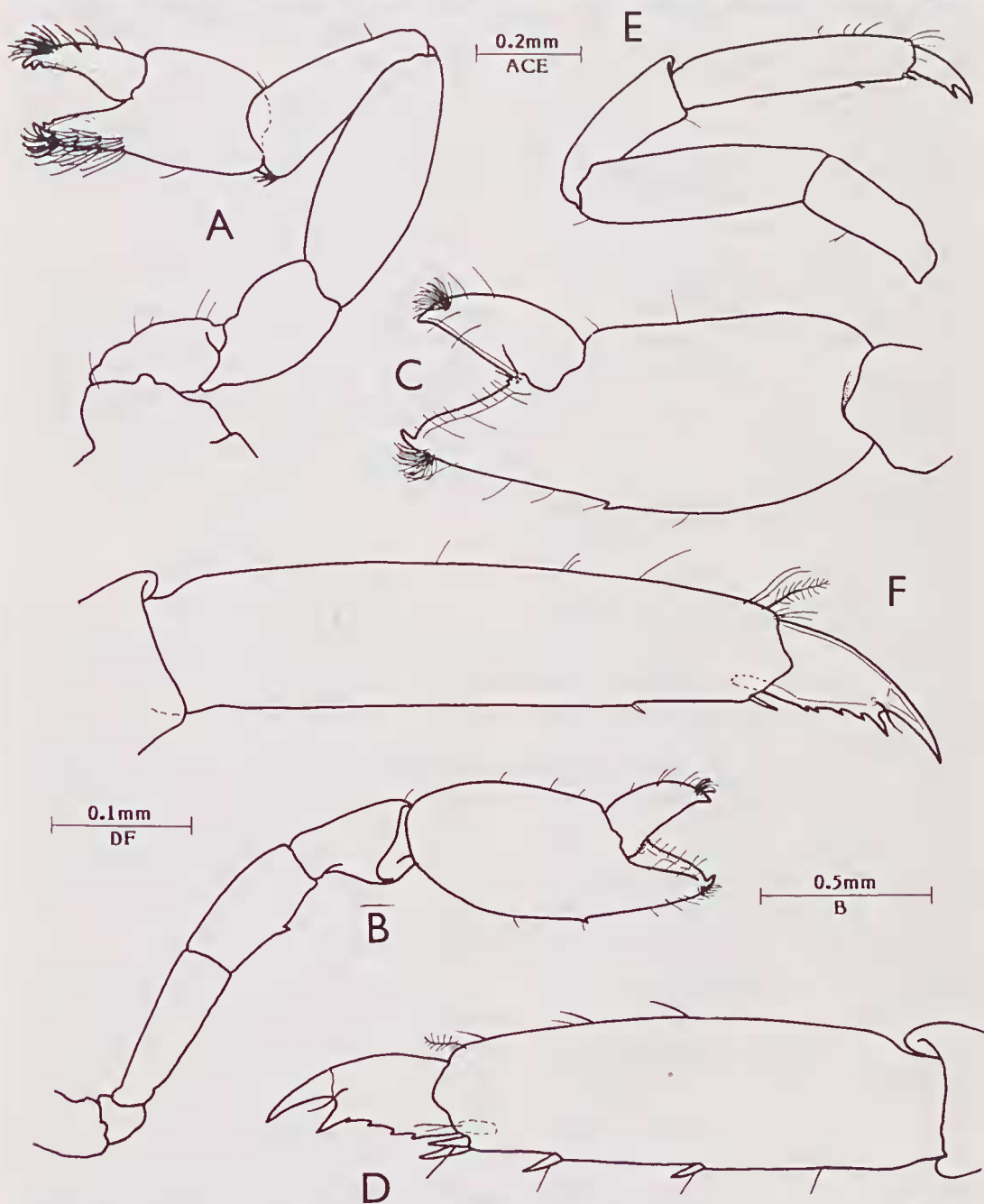


Fig. 4. *Typton nanus* holotype ♀ : A, first pereiopod; B, right second pereiopod; C, same, chela; D, fourth pereiopod, propod and dactyl; E, fifth pereiopod; F, same, propod and dactyl.

small acute distal denticle, dorsal edge sharp, appearing finely milled, lateral lip thickened, unarmed, with stout hooked distal tooth, dense tuft of short setae distoventrally; carpus about 0.6 of palm length, robust, expanded distally, excavate with small rounded distomedial lobe; merus subequal to carpus length, about 2.0 times longer than wide, broadest centrally, with single small acute tooth at 0.5 of ventral margin; ischium about 1.2 times merus length, 3.3 times longer than distal width, broadest distally, unarmed; basis short, about 0.31 of ischium length; coxa robust, without special features.

Third pereopods missing. Fourth pereopod robust, reaching to about level of intermediate segment of antennular peduncle; dactylus compressed with well developed unguis, about 3.2 times longer than basal width, simple, curved, corpus about 1.8 times longer than proximal depth, about 1.5 of unguis length, with large acute distoventral accessory tooth, about half size of unguis, ventral margin sharp, convex with four small, acute denticles, with single distolateral sensory seta; propod robust, slightly swollen, about 3.5 times longer than central width, with two stout distoventral spines and single similar spines at 0.45 and 0.75 of the ventral margin; carpus about 0.85 of propod length, 2.5 times longer than distal width, unarmed; merus 1.3 times propod length, 3.0 times longer than wide, unarmed; ischium 0.6 of merus length, proximally narrowed; basis and coxa without special features. Fifth pereopod similar to fourth; dactyl with corpus about 1.9 times longer than deep, unguis about 0.6 of corpus length, ventral margin with four acute denticles and large distal accessory tooth; propod about 1.25 times length of fourth propod, about 4.5 times longer than deep, with single small distoventral spine and smaller spine at 0.75 of ventral margin, without distolateral cleaning setae.

First pleopod with basipodite 3.0 times longer than broad, with single short (? broken) ovigerous seta distomedially; exopod subequal to basipodite length, about 4.0 times longer than broad; endopod about 0.38 of exopod length, about 3.0 times longer than proximal width, tapering, distally rounded, with one long plumose seta and two short simple setae distomedially. Second pleopod with basipodite 1.1 times longer than first pleopod, 2.5 times longer than wide, without

ovigerous setae; exopod about 1.1 times length of first pleopod exopod; endopod subequal to exopod length, with appendix interna at about 0.55 of length.

Uropod with protopodite broad and unarmed posterolaterally; exopod broad, 2.0 times longer than wide, broadest centrally, lateral margin feebly convex, glabrous, with small acute distolateral tooth with larger mobile spine medially; endopod subequal to exopod length, narrower, about 2.35 times longer than wide.

Measurements. Total length, (approx.), 3.75mm; carapace and rostrum, 1.4mm; postorbital carapace, 1.05mm; second pereopod chela, 0.9mm.

Colouration and habitat. No data.

Systematic position. *Typton nanus* is most closely related to *T. wasini* Bruce, 1977, the only other Indo-West Pacific species of the genus in which the incisor process of the mandible is completely absent. *T. nanus* may be distinguished from *T. wasini* by (i) its smaller size, (ii) three small dorsal rostral teeth and (iii) the presence of small acute teeth on the ventral palm and merus of the second pereopod.

DISCUSSION

Typton nanus sp. nov., raises to seven the number of species now known from the Indo-West Pacific region, all of which have been reported from Australian waters. The species fall into two distinct groups on the basis of the morphology of the mouthparts. One group, all of which have the incisor process of the mandible present, has the endites of the maxilla and first maxilliped broadened and provided with a dense medial band of the fine setae, which is absent from the second group. The former group includes *T. dentatus* Fujino and Miyake, 1969, *T. anomalus* (Bruce, 1979), and *T. dimorphus* Bruce, 1986. In addition to *T. nanus*, the latter group includes *T. bawii* Bruce, 1972, *T. australis* Bruce, 1973, and *T. wasini* Bruce, 1977.

A key to the Indo-West Pacific species of *Typton* has been provided by Bruce (1986). *T. nanus* may be readily included in this key by the insertion of the following couplets.

3. Dorsal rostrum with 3-4 teeth 3a
— Dorsal rostrum with 1-2 teeth 4

3a Larger species, rostrum with four dorsal teeth; ventral border of palm and merus of second pereopods unarmed

..... *wasini* Bruce (Kenya and Great Barrier Reef)

— Small species, rostrum with three dorsal teeth; ventral border of palm and merus of minor second pereopod with small acute tooth (major second pereopod unknown).....*nanus* sp. nov., (Timor Sea)

Although very small, the single specimen of *T. nanus* is considered to be adult on account of the presence of a single ovigerous seta on the first pleopod. The size of the ova in palaemonid shrimps is consistently about 0.45-0.5mm, where abbreviated develop-

ment does not occur. Small species therefore carry relatively few ova and *T. nanus* could probably only accommodate about 6-8 ova beneath the abdomen. A single ovigerous setae would probably be capable of providing enough adhesive secretions to attach such a small number of ova.

Two of the Indo-West Pacific *Typton* species have been found in association with sponge hosts. *T. dentatus* and *T. wasini* both occur in association with demospongid sponges of the genus *Reniera* Nardo. All other species have been obtained from unidentified sponges or pulverized coral washings, but are probably obligatory associates of sponges, possibly including taxa of an encrusting or even boring habitus.

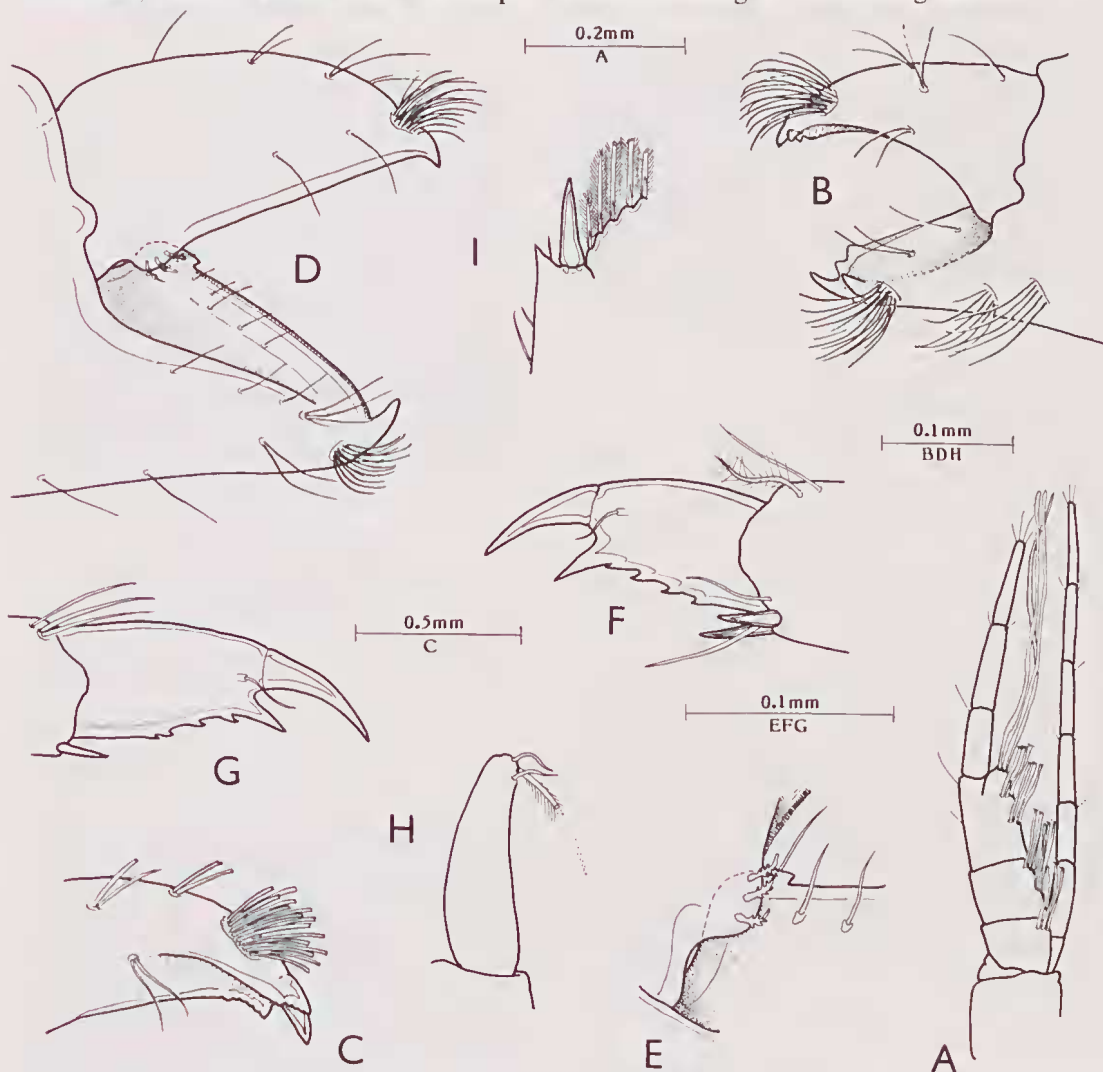


Fig. 5. *Typton nanus* holotype ♀: A, antennule, flagella, lateral; B, first pereopod, fingers; C, same, tip of dactyl; D, second pereopod, fingers, lateral; E, same, detail of hinge region; F, fourth pereopod, dactyl; G, fifth pereopod, dactyl; H, first pleopod, endopod.

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